

We claim:

1 1. A system for automatic context management for testing, monitoring and automating
2 network applications, comprising network applications with client side code execution, said system
3 comprising:

4 a testing, monitoring, or automating tool;

5 a context-full API for a replay engine of said tool; and

6 a recorder capable of recording at least one context-full test script;

7 said replay engine being capable of executing said context-full test script.

1 2. The system according to claim 1, wherein said context-full API is based on a page-level
2 API.

1 3. The system according to claim 2, wherein said context-full page-level API comprises an
2 extensible document parser for determining at least one parser extension.

1 4. The system according to claim 3, wherein said at least one parser extension includes a
2 replay instruction specifying at least one parser addition and parameters for said parser addition.

1 5. The system according to claim 3, wherein said parser addition includes a plug-in
2 module for said extensible document parser.

1 6. The system according to claim 3, wherein said extensible document parser is capable of

2 being extended with at least one parser extension.

1 7. The system according to claim 4, wherein said parser addition for said parser extension
2 is selected from a library of parser additions.

1 8. The system according to claim 7, wherein each of said parser additions of said library
2 of parser additions implements a specific parsing algorithm.

1 9. The system according to claim 8, wherein said parser addition of said library of parser
2 additions implements an algorithm for parsing hyperlinks from a HTML document.

1 10. The system according to claim 8, wherein said parser addition of said library of parser
2 additions implements an algorithm for parsing forms from a HTML document.

1 11. The system according to claim 8, wherein said parser addition of said library of parser
2 additions implements an algorithm for parsing embedded documents from a HTML document.

1 12. The system according to claim 9, wherein said algorithm parses hyperlinks by
2 searching text between a left and a right boundary string.

1 13. The system according to claim 2, wherein said context-full API comprises form
2 merging replay instructions.

1 14. The system according to claim 13, wherein said form merging instructions comprise:
2 a reference to a form in a previously downloaded web page, said form in said previously
3 downloaded web page being an HTML form;
4 a reference to a form in said test script, said form in said test script being a script form;
5 and
6 instructions for merging said HTML form and said script form to produce a form to be
7 submitted.

1 15. The system according to claim 14, wherein:
2 said instructions for merging said HTML form and said script form comprise merging
3 instructions for each individual form field of said HTML form and said script form;
4 said merging instructions for each said individual form field comprising one member of the
5 group consisting of:
6 an instruction to send a form field value obtained from said HTML form;
7 an instruction to send a form field value specified in said script form; and
8 an instruction to not send one of said form fields;

1 16. The system according to claim 15, wherein said merging instructions comprise an
2 instruction to use an action URL in said test script instead of an action URL obtained from said
3 HTML form for said form to be submitted.

1 17. The system according to claim 1, wherein said recorder records a page-level test script
2 comprising parser extensions and form merging instructions.

1 18. The system according to claim 17, wherein said recorder keeps track of a session
2 history by building representations of all web pages downloaded so far during a recording session.

1 19. The system according to claim 17, wherein:
2 said context-full API is based on a page-level API;
3 said context-full page-level API comprises an extensible document parser;
4 said recorder uses said extensible document parser for parsing at least one HTML
5 document.

1 20. The system according to claim 17, wherein said recorder automatically detects which
2 of said parser extensions and said form merging instructions are needed in order to record a test
3 script which will correctly use dynamic information during a script replay.

1 21. The system according to claim 20, wherein said recorder detects the need for recording
2 at least one of said parser extensions by detecting that a context-less replay instruction is to be
3 recorded otherwise.

1 22. The system according to claim 20, wherein:
2 said context-full page-level API comprises an extensible document parser;
3 said extensible document parser comprises at least one parser extension which is a replay
4 instruction specifying at least one parser addition and parameters for said parser addition;
5 said parser addition for said parser extension can be chosen from a library of parser
6 additions;

7 each of said parser additions of said library of parser additions implements a specific
8 parsing algorithm; and
9 said recorder detects which one of said parser extensions is to be recorded by querying each
10 of said parser additions for suitable parameters.

1 23. The system according to claim 1, wherein said recorder records form merging
2 instructions by performing fuzzy form detection.

1 24. The system according to claim 23, wherein said recorder performs fuzzy form
2 detection by comparing a form being submitted to all forms in a session history, choosing a form
3 from said session history which is most similar to said form being submitted; and recording said
4 form merging instructions so that said recorded form merging instructions applied to said form
5 chosen from said session history result in a form identical to said form being submitted.

1 25. The system according to claim 1, wherein said replay engine executes said test script,
2 said test script comprising parser extensions and form merging instructions.

1 26. The system according to claim 25, wherein said replay engine keeps track of a session
2 history by building representations of all web pages downloaded so far during a replaying session.

1 27. The system according to claim 25, wherein:
2 said context-full API is based on a page-level API;
3 said context-full page-level API comprises an extensible document parser; and

a memory storing processing instructions for controlling the processor, the processor operative with the processing instructions to:

- record at least one context-full test script;
- determine at least one parser extension using an extensible document parser of a context-full page-level API for a replay engine of a testing, monitoring, or automating tool;
- include a replay instruction specifying at least one parser addition and parameters for said parser addition in said at least one parser extension;
- select said parser addition for said parser extension from a library of parser additions;
- implement a specific parsing algorithm using each of said parser additions of said library of parser additions;
- implement an algorithm for parsing hyperlinks from a HTML document using said parser addition of said library of parser additions;
- parse hyperlinks by searching text between a left and a right boundary string using said algorithm; and
- execute said context-full test script using said context-full page-level API for said replay engine.

31. A device for automatic context management for testing, monitoring and automating network applications, comprising network applications with client side code execution, said device comprising:

- a processor; and
- a memory storing processing instructions for controlling the processor, the processor operative with the processing instructions to:

7 record at least one context-full test script;

8 generate form merging replay instructions in a context-full page-level API for a replay

9 engine of a testing, monitoring, or automating tool, said form merging instructions comprising: a

10 reference to a form in a previously downloaded web page, said form in said previously downloaded

11 web page being an HTML form; a reference to a form in said test script, said form in said test

12 script being a script form; and instructions for merging said HTML form and said script form to

13 produce a form to be submitted; and

14 execute said context-full test script using said context-full page-level API for said replay

15 engine.